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# FRESH FRUITS AND VEGETABLES AS CONSERVERS OF OTHER STAPLE FOODS

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UNDER the present unusual conditions, when it is desirable to save staple foods and to reduce the amount of labor expended in transporting foods, special attention should be given to the possibility of using perishable food materials, particularly vegetables and fruits, near the place of their production. The purpose of this bulletin is to show how the use of these foods can be increased without lessening the food value or attractiveness of the diet or seriously altering food habits.

In general, the bulletin points out that peas, beans, and similar legumes would be the most useful as protein (meat) savers; potatoes, sweet potatoes, and similar vegetables as starch savers; and fruits and sweet potatoes as possible sugar savers, while all fruits and green and succulent vegetables are valuable to supply the diet with mineral substances and with certain substances essential to health which are present in them and in many other foods in minute amounts. When vegetables are used to supply protein it is important to supplement them with some other food containing protein, and for this purpose milk, particularly skim milk (so often a by-product, and a perishable one as well), is important. By means of bills of fare and recipes practical application is made of the principles set forth in the bulletin.

# FRESH FRUITS AND VEGETABLES AS CON- SERVERS OF OTHER STAPLE FOODS.<sup>1</sup>

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## FOOD AND BODY NEEDS.

**T**HE PRINCIPAL food substances needed in the diet are starch, sugar, vegetable acids and fiber, fat, protein, mineral substances (iron, calcium, phosphorus, and others), and also certain substances necessary for growth and health which have been only recently discovered and for which no simple names have been agreed upon.

Nitrogen, which protein alone supplies, and mineral substances, which most food materials, except purified fats and sugars, supply, are necessary for body growth. Protein, fat, starch, sugar, and some of the fiber are consumed within the body much as coal is consumed in the firebox of an engine and for the same purpose, namely, to furnish power to run the machine, whether it be the body or the engine. The protein, fat, starch, and sugars are needed daily in comparatively large amounts; the mineral substances, vegetable acids, and fiber in relatively small amounts; and the unnamed substances essential for body well-being in minute amounts.

The greater part of the protein, fat, sugar, and starch of the diet is, under most circumstances, conveniently supplied by those foods which contain little or no water. Protein is obtained by grown people chiefly from meat, milk, eggs, cheese, and cereals. In the case of children it should be supplied largely by milk, and even this food, though liquid, contains less water than some of the solid foods, namely, many of the fresh fruits and vegetables. Starch is obtained chiefly from the cereals (wheat, corn, oats, rice, rye, and

<sup>1</sup> Prepared under the direction of C. F. Langworthy, Chief, Office of Home Economics.

barley), which in the form in which they come into the household (flour, meal, breakfast foods, etc.) contain little or no water. Much of the fat of the diet is obtained from butter, lard, and oil, and much of the sugar from ordinary sugar. These foods, again, contain little or no water.

The fresh fruits and vegetables, on the other hand, although they are watery, are convenient sources of many of the substances which are needed by the body in small amounts. It is, in fact, generally believed that, unless these foods are used to some extent, the diet will be lacking in mineral materials and in the other important growth and health promoting substances. They are, however, not important sources of fuel. They contain little protein and no fat. Some fresh vegetables, particularly potatoes and sweet potatoes, contain considerable starch and sugar, and almost all fruits contain sugar. In the average diet, however, the amount of starch and sugar obtained from fresh fruits and vegetables is small as compared with that obtained from such food materials as cereals and ordinary sugar.

#### **USES OF FRESH FRUITS AND VEGETABLES IN THE ORDINARY DIET.**

Under ordinary conditions, 1 to 1½ pounds of fresh fruits and vegetables (the equivalent of an apple or an orange, two medium-sized potatoes, and an average-sized helping of some other vegetable) is probably all that even a grown person really needs in the course of a day. He may desire more because of their fine flavor or refreshing character, but the necessary health promoting substances would probably be obtained from the amount mentioned. These supply less than a tenth of all the fuel and the protein needed but a relatively large part of the iron, calcium, and phosphorus.

#### **USES OF FRESH FRUITS AND VEGETABLES IN THE WAR EMERGENCY DIET.**

In an emergency, when fresh fruits and vegetables are relatively abundant they may with advantage be used partly to replace cereals and sugar, and to a less extent meat. Under such circumstances it is the part of wisdom to examine the list of fruits and vegetables and to see which can be used in such a way as to save cereals or sugar, and which used in such a way as to save meat.

Fresh fruits and vegetables can be used in large quantities with little danger, providing they are carefully cleaned and handled. It is even safe to say that there is absolutely no danger from the fruits and vegetables themselves, the only real difficulty lying in the fact that, being bulky, they quickly satisfy the appetite, and sometimes lead people to leave out of their diet the more substantial foods—

meats, cereals, etc.—which are needed either for fuel or for body-building purposes. This fact should always be kept in mind in finding uses for these bulky foods.

### CLASSIFICATION OF STAPLE FOOD SAVERS.

Under the present unusual circumstances, the various fresh fruits and vegetables may be classed as follows:

*Meat savers.*—Shelled green peas, shelled green beans (Lima, kidney, etc.); shelled green cowpeas (common in the South), shelled green soy beans (common in the South).

*Cereal savers.*—Potatoes, sweet potatoes, partially ripe bananas (cooked).

*Sugar savers.*—Sweet potatoes, all fruits.

### USING SHELLED GREEN BEANS AND PEAS TO SAVE MEAT.

Beans and peas contain more protein than other fresh vegetables. This, however, is not the same as the proteins of meat, milk, or egg, and should not be used to the exclusion of the others. When, however, beans and peas are freely used, less milk, meat, and eggs are needed. For these reasons these vegetables are here called, not meat substitutes but meat savers. The following foods or combinations of foods supply as much protein as one-fourth pound of beef of average composition:

Eight or nine ounces of shelled green peas or beans. A large dish of green peas may be used in place of meat for dinner occasionally. Many persons like peas cooked with mint or served with mint sauce.

One egg and 4 or 5 ounces of shelled green peas or beans. An omelet with peas (1 egg and 1 cup peas per person) or a baked pea or bean soufflé may be used as a meat substitute. (See recipe on p. 10.)

One cup skim milk and 4 ounces of shelled green peas or beans. A Lima bean chowder made with skim milk is a good lunch or supper dish. (See recipe on p. 10.)

### USING POTATOES TO SAVE CEREALS.

A small potato (3 to 4 ounces) supplies as much starch as a large slice of bread (1 ounce), but rather less protein. Potatoes eaten abundantly make it possible to get along with less bread. Potatoes can be substituted for about one-fourth of the wheat flour used in making ordinary bread and rolls. Recipes are given in Farmers' Bulletin 807.<sup>1</sup> These call, however, for old rather than new potatoes. Mashed potatoes may be used in place of biscuit crust in making meat pies. Mashed potato sliced and fried may be used in place of bread and butter and makes a good breakfast dish. A very large variety of attractive salads may be made by combining potatoes with

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<sup>1</sup> Bread and bread making in the home.

other vegetables—peas, beans, beets, cucumbers, radishes, onions, etc. Cottage cheese and potato salad go well together. This cheese has always been made in small quantities in the home, and now the Department of Agriculture is recommending to dairymen that they make it as a means of utilizing their large quantities of skim milk. This should make cottage cheese a more common article of trade than it has been in the past.

Sweet potatoes can be used in the same way as white potatoes. Bananas baked or fried supply considerable starch, though the amount can not be exactly stated, because as the fruit ripens the starch changes to sugar. Green bananas peeled and boiled can be used like mashed potatoes, or may be sliced raw and fried.

### USING FRUITS TO SAVE SUGAR.

All ripe fruits contain sugar. The amount varies from about 3 ounces or one-fifth cup per pound in fresh figs and plums to about one-half ounce per pound in watermelon.

If the water is driven off from fruits, as in the drying process, the sugar becomes far more prominent than it is in fresh fruits. Dried fruits, therefore, taste far sweeter than fresh ones and are for this reason often classed among the sweets. It should be remembered, however, that sugar is present in all fresh fruits, even in the most acid ones, and that those persons who wish to do so can economize on other kinds of sugar by eating large amounts of fresh fruits in unsweetened forms.

In warm weather melons and other fruits may be used in place of "made" desserts, which usually contain both butter and sugar. Fruit and ice-cold junket, which can be prepared from skim milk, make a refreshing dessert and utilize perishable foods chiefly. Or the dessert course may be omitted entirely and a fruit salad with cottage cheese may be used in its place.

### MAKING FRESH FRUITS AND VEGETABLES HELP OUT ON THE PROTEIN AND FUEL OF THE DIET.

The following list of foods provides a day's ration for three men or four women (about 11 ounces of protein and over 10,000 calories). It is suitable for those who can get large supplies of fresh fruits and vegetables. These foods supply over one-fifth of the protein and nearly a third of the fuel, whereas in the amounts used in the ordinary mixed diet they seldom supply more than a tenth of either.

Cereals of various kinds (wheat flour, corn meal, etc.)	pounds	1½
Beef of average composition	pound	¾
Milk	quarts	2
Cottage cheese	pound	½
Potatoes	pounds	3
Shelled green peas or beans	do.	1¼

Other vegetables, including those served cooked and those used raw as salads-----	pounds--	2
Fruits (the equivalent of 6 quarts of strawberries, 12 large oranges, or 16 large apples) -----	pounds--	6
Fat (butter, butter substitute, lard, oil, and other fats), 1 cup-----	pound--	$\frac{1}{2}$
Sugar, 1 cup-----	do-----	$\frac{1}{2}$

These foods could be served as follows:

### A DAY'S BILL OF FARE.

#### BREAKFAST.

Fruit, 2 quarts berries or 2 pounds of grapes, or the equivalent in any other fruit.

Cereal, 4 ounces uncooked, equal to 2 cups of mush.

The richer half, or "top," of 2 quarts of milk.

Toast, 4 ounces, the equivalent of 4 very large slices or 8 very small ones.

Butter, 2 ounces, or 4 cubic inches.

Sugar on cereal or fruit, or in coffee, tea, or cocoa, 2 ounces, or  $\frac{1}{4}$  cup.

#### LUNCH OR SUPPER.

Cottage cheese,  $\frac{1}{2}$  pound.

Vegetable salad: Four potatoes, an equal amount of another vegetable (cucumbers, beets, string beans, peas, or any other), 2 ounces of oil, bacon fat, or other fat.

Crisp corn bread (1 cup or 8 ounces of corn meal, 1 pint skim milk. For recipe see Farmers' Bulletin 565.<sup>1</sup>)

Butter, fruit, and sugar, as in breakfast.

#### DINNER.

Meat pie with mashed potato crust, using 1 cup milk in crust.

Peas,  $\frac{1}{2}$  peck unshelled, or 20 ounces shelled.

Bread, 4 ounces.

Fruit shortcake (2 pounds of fruit,  $1\frac{1}{2}$  cups of flour, 2 to 4 tablespoons of fat, 1 cup of milk,  $\frac{1}{2}$  cup of sugar).

Butter or other fat on bread or with vegetables, 4 to 6 level tablespoons, 2 to 3 ounces.

### VEGETABLE RECIPES.

It should be remembered that the simplest way to serve vegetables is also a good way, i. e., to boil, steam, or bake them and to serve them either with salt only or with a little butter, milk, or cream. However, when large amounts of vegetables are to be introduced into the diet, as at present, it is desirable to know a variety of ways in which to prepare them. For this reason the following recipes are given.

#### VEGETABLE SOUPS.

Good vegetable soups may be made by finely chopping any vegetable or combination of vegetables and cooking in water with a little

<sup>1</sup> Corn meal as a food and ways of using it.



rice or farina for thickening. The chopping is most conveniently done with a food grinder. The following recipe calls for a combination of vegetables, which is only one out of many which can be used. Left-over vegetables can be used in soups of this kind.

#### VEGETABLE SOUP.

2 turnips.	6 tomatoes or 1 pint can of tomatoes.
2 potatoes.	2 sprigs parsley.
1 onion.	1½ teaspoons salt.
6 stalks celery with tips.	¼ teaspoon pepper.
2 carrots.	2 tablespoons rice.
1 quart water.	

Wash and pare the vegetables and put them through the meat chopper, using the finest blade. Combine all the ingredients and cook until the vegetables and rice are soft.

The water in which rice has been cooked may be used in preparing this dish instead of rice itself.

#### MILK-VEGETABLE SOUPS.

These soups offer a good way in which to utilize vegetables and also skim milk which is often thrown away.

##### MILK-VEGETABLE SOUP, METHOD No. 1.

The soup for which the recipe is given above can be made with milk, providing no acid vegetables are used. This has the advantage over some other ways of making milk-vegetable soups of preserving all of the juices of the vegetables. The cooking should be done in a double boiler to prevent scorching and curdling. This is a slow process, however, for the temperature in the double boiler is below the boiling point, and for this reason the vegetables should be chopped very finely.

##### MILK-VEGETABLE SOUP, METHOD No. 2.

Milk-vegetable soups may be thickened with flour. The general proportions are as follows:

*Ingredients.*—Liquid, 1 cup. This may be milk (whole or skim), vegetable pulp, or the water in which vegetables have been cooked.

Fat, ½ tablespoon or less. This may be butter, butter substitute, or drippings. The fat from bacon or salt pork gives a particularly good flavor.

Flour, ½ tablespoon.

*Method of preparing.*—Melt the butter, add the flour, and cook one or two minutes, being careful not to brown. Add the liquid and stir until the mixture thickens. Season with salt and pepper.

The following is a typical recipe:

## STRING-BEAN SOUP.

2 quarts string beans.  
 $\frac{1}{4}$  cup flour.  
 $\frac{1}{4}$  cup or less of fat.  
 1 small slice of onion.

Salt.  
 Pepper.  
 Milk, whole or skim, enough to make  
 2 quarts of soup.

Cook the beans until tender in as little water as possible, drain, and rub through a sieve. Add the bean liquor and milk enough to make 2 quarts. Melt the butter, add the flour, and cook carefully one or two minutes. Add the liquid and cook until the mixture thickens. Season with salt and pepper.

Part of the beans can be cut into small pieces and served in the soup, if desired. The addition of large amounts of such pieces and of sliced potatoes converts the soup into a chowder.

## MILK-VEGETABLE SOUP, METHOD NO. 3.

Soups can be thickened with stale bread, which makes it possible to utilize still another food sometimes thrown away. Half a small slice of bread or about one-fourth ounce of bread is enough to thicken 1 cupful of soup. The following is a typical recipe.

## LETTUCE SOUP.

1 head lettuce, or the equivalent in  
 the outer leaves of lettuce.  
 1 small slice onion.  
 2 quarts skim milk.

1 large slice stale bread.  
 Butter or other fat, if desired.  
 Salt and pepper.

Put the lettuce and onion through the meat chopper with the bread to save the juice. Put into a double boiler with the skim milk and cook until the lettuce is soft. Add fat (if desired) and the salt and pepper.

## VEGETABLE CHOWDERS.

Vegetable chowders offer another good way of using vegetables and also skim milk. They differ little from milk-vegetable soups made according to Method No. 1, except that less liquid is used and vegetables are usually cut into small pieces instead of being chopped finely. For this reason chowders seem more substantial. As in the case of the vegetable soups, it is a mistake to be confined to any definite recipe, for under these circumstances materials are often wasted which should be used. The following typical recipe is therefore only suggestive.

## MIXED VEGETABLE CHOWDER.

$\frac{1}{4}$  pound salt pork or bacon.  
 1 onion.  
 6 medium-sized tomatoes or 1 pint  
 stewed tomatoes.  
 1 green pepper.

4 medium-sized potatoes.  
 3 carrots.  
 2 cups skim milk.  
 2 tablespoons flour.  
 2 teaspoons salt.

Put the bacon or pork, onion, and pepper through the meat chopper and cook carefully about five minutes. Add the water and tomatoes and cook until the vegetables are tender. Cut the potatoes and carrots into small pieces and cook in water until tender, drain, and add with the skim milk to the other ingredients. Thicken with the flour mixed with a little cold milk.

## LIMA-BEAN CHOWDER.

$\frac{1}{4}$  pound salt pork.  
 1 onion.  
 1 green pepper.  
 3 cups skim milk.

1 pint or  $\frac{1}{2}$  pound green shelled Lima  
 beans.  
 4 small potatoes.  
 Salt and pepper.

Put the pork, onions, and pepper through the grinder. Cook carefully for 2 or 3 minutes, being careful not to burn. Add either the beans or the potatoes with water enough to cover and cook until the vegetables are soft. Cook the other vegetable separately and when soft add with the milk to the other mixture. Reheat and season.

The protein in the above dish is equal to that in about three-fourths pound of beef of average composition.

Any vegetable may be used in place of the beans. Corn and salsify are perhaps oftenest so used.

## VEGETABLE SOUFFLÉ OR BAKED OMELET.

These dishes are a good way to combine eggs and vegetables. If made with the green shelled legumes (peas, beans, soy beans, or cow-peas), they may be considered meat savers.

## GENERAL RECIPE.

- (1) A thick sauce made with  $\frac{1}{4}$  cup fat,  $\frac{1}{4}$  cup flour, and 1 cup liquid which may be milk (whole or skim), cream, meat stock, or the water in which vegetables have been cooked.
- (2) 1 cup thick vegetable pulp made by draining cooked vegetables and then mashing them or putting them through a sieve.
- (3) 3 eggs, the whites and yolks beaten separately.
- (4) Flavoring. Salt, pepper, onion juice, and any one of the following may be used: Very finely chopped parsely, chives, or ham, or  $\frac{1}{8}$  teaspoon curry powder. Bacon used in making the sauce gives a good flavor.

Mix the vegetable pulp, seasoning, sauce, and well-beaten egg yolks. Carefully fold in the well-beaten whites of the eggs, put into a buttered baking dish, and bake in a slow oven until firm.

The amount of vegetables in this dish may be increased by serving vegetables around the soufflé.

The following is a typical recipe in which the protein is equivalent to that in 10 or 11 ounces of average beef.

## GREEN-PEA SOUFFLÉ.

$\frac{1}{4}$  cup fat.  
 $\frac{1}{4}$  cup flour.  
 1 cup skim milk.  
 1 cup mashed cooked peas (which will  
 require about  $\frac{1}{4}$  peck peas).  
 3 eggs.

Salt.  
 Pepper.  
 A few drops onion juice, or a very  
 small piece of onion boiled with the  
 peas.

Combine the ingredients as directed above.

**OTHER VEGETABLES.**

Directions for preparing these vegetables in other ways and also for preparing vegetables not mentioned above can be found in Department of Agriculture bulletins.<sup>1</sup>

**CONCLUSIONS.**

When fresh fruits and vegetables are abundant and cheap they can be used in large enough amounts to effect an important saving of staple foods. If used intelligently, there is no danger that the diet will lack fuel or protein. Fresh legumes may be used to a certain extent in place of meat, potatoes in place of bread, and fruit in place of sugar. In connection with these foods, however, it is safe and highly desirable to use skim milk and its products, which, like fresh fruits and vegetables, are perishable and can be profitably used near the place of production.

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<sup>1</sup> U. S. Dept. Agr. Farmers' Bul. 256. Preparation of Vegetables for the Table. U. S. Dept. Agr. Farmers' Bul. 712. School Lunches.



